

Missouri  
Department of  
Natural Resources

Use Attainability Analysis

for

WBID 0613 West Fork Locust Creek

Submitted by

Pickett Ray and Silver

To

Missouri Department of Natural Resources  
Water Protection Program

Date Received: October 31, 2007



Missouri  
Department of Natural Resources  
**Field Data Sheets for Recreational Use Stream Surveys**

**Data Sheet A – Water Body Identification**

**I. Water Body Information** (For water body being surveyed)

Water Body Name (from USGS 7.5' quad): West Fork Locust Creek	
Missouri Water Body Identification (WBID) Number: 0613	
8-digit HUC: 20090415	County: Sullivan
Upstream Legal Description (from Table H): 33, 64N, 21W	
Downstream Legal Description (from Table H): Hwy 6	
Number of sites evaluated: 10	
List all sites numbers, listed consequently upstream to downstream: 0613_01 Hwy ZZ Bridge, 0613_02 Maple Rd, 0613_03 Marble Rd, 0613_04 Noel Rd, 0613_05 Hwy E Bridge, 0613_06 150m downstream of site 05, 0613_07 Hwy PP Bridge, 0613_08 150m downstream of site 07, 0613_09 Collins Rd, 0613_10 Redwood Rd	

**Site Locations Map(s):** Attach a map of the entire segment with assessment sites clearly labeled. Mark any other items that may be of interest.

**II. Facility Information** (list all permitted discharges to the water body segment)

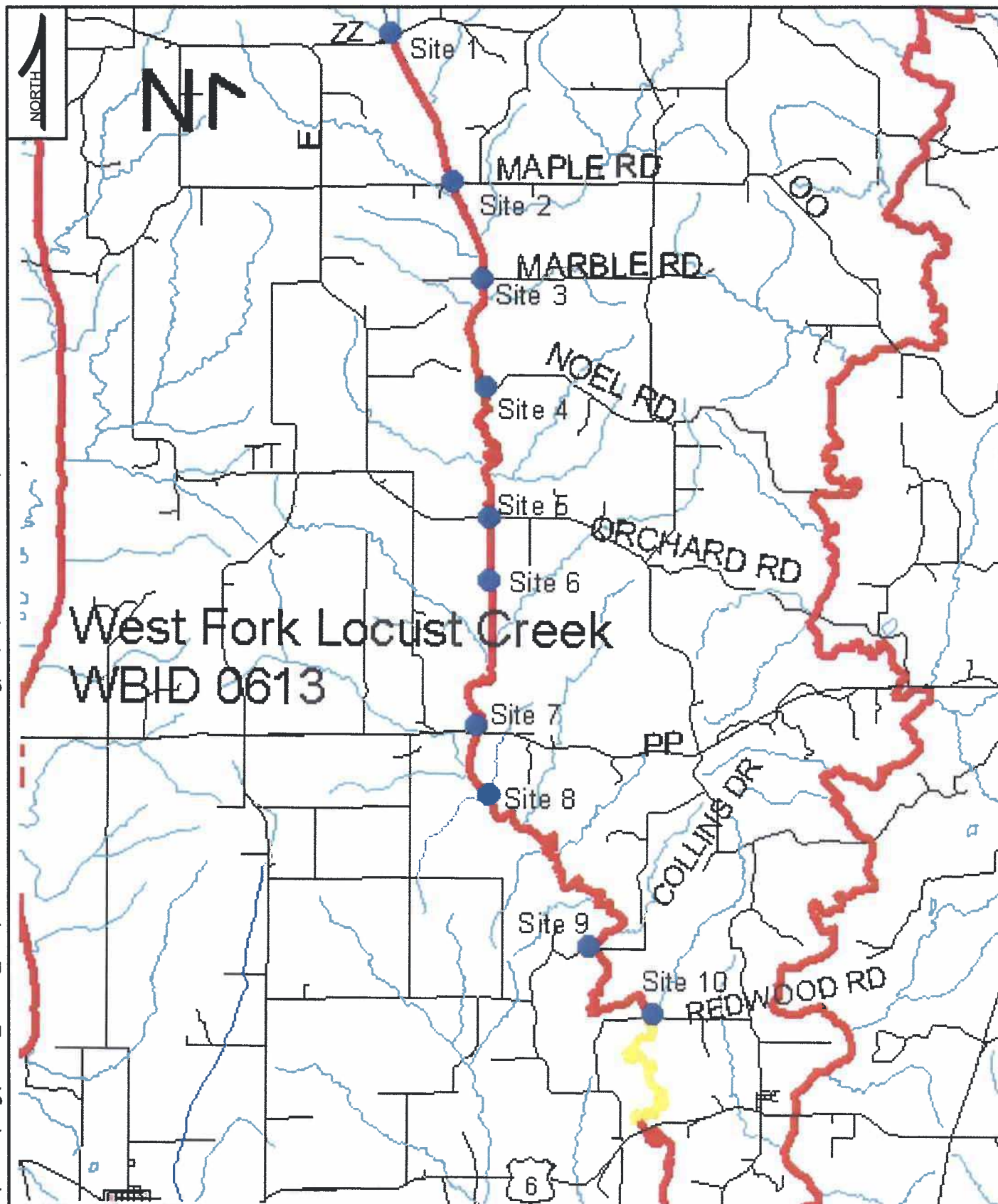
Facility Name(s) and Permit Number(s): PSF Locust Ridge – MO 0118494
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**III. UAA Surveyor** (please print legibly)

Name of Surveyor: Renee Martin	Telephone Number: 573-875-7844
Organization/Employer: Applied Environmental Solutions	

**Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.**

**Signed:** \_\_\_\_\_ **Date:** \_\_\_\_\_



# PICKETT RAY & SILVER

Civil Engineers Land Surveyors Natural Resources

Address: 333 Mid Rivers Mall Drive  
St. Peters, Missouri 63376  
Phone: (636)397-1211  
Fax: (636)397-1104  
Website: www.prs3.com

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WBID #: 0613  
Name: W Fk Locust Creek  
County: Sullivan  
GIS Location Map  
Sheet 1 of 1

Map provided by AES.  
Please refer to USGS for exact site location indicators.

PRS Job Number: 07031.MODN.01E  
Drawn By: BLS  
Checked By: JCV  
Date: 10-15-07  
Date: 10-15-07

PRS Job Number: 07031.MODN.01E  
 Drawn By: BLS Date: 10-15-07  
 Checked By: JCV Date: 10-15-07

\\3serverpr\Projects\07031\dwg\07031\_MODN\_01E\0613 W FK Locust Creek.dwg, 10/16/2007 9:11:00 AM, BLSTOESZ



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WBID #: 0613  
Name: W Fk Locust Creek  
County: Sullivan  
USGS Location Map

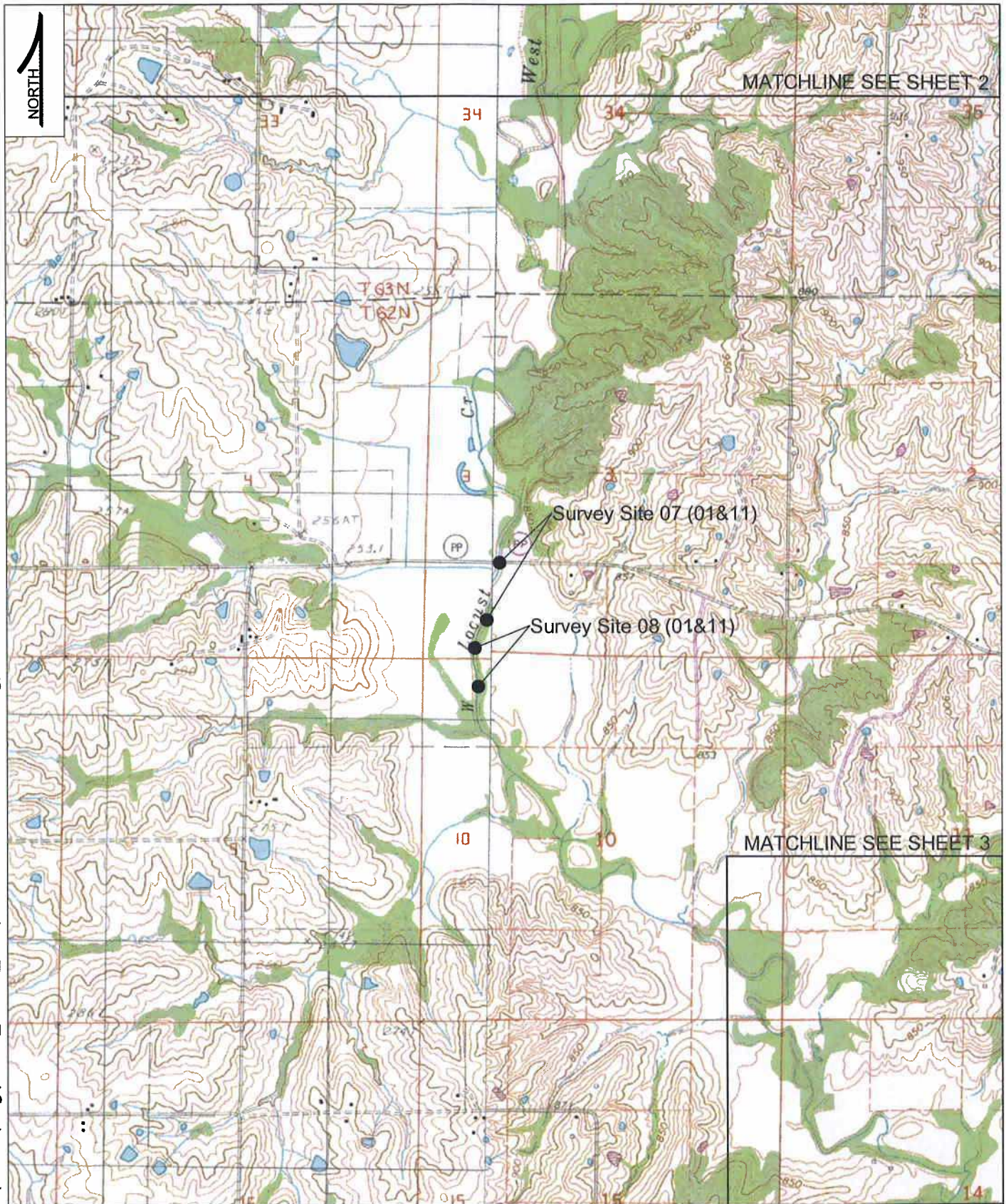
Sheet 2 of 4



**GRAPHIC SCALE**  
1 inch = 2000ft.

PRS Job Number: 07031.MODN.01E  
Drawn By: BLS Date: 10-15-07  
Checked By: JCV Date: 10-15-07

\\3serverpr\Projects\07031\dwg\07031\_MODN\_01E\0613 W FK Locust Creek.dwg, 10/16/2007 9:11:27 AM, BLSTOESZ



## PICKETT RAY & SILVER

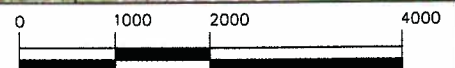
Civil Engineers Land Surveyors Natural Resources

Address: 333 Mid Rivers Mall Drive  
St. Peters, Missouri 63376  
Phone: (636)397-1211  
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WBID #: 0613  
Name: W Fk Locust Creek  
County: Sullivan  
USGS Location Map

Sheet 3 of 4



**GRAPHIC SCALE**  
1 inch = 2000ft.

PRS Job Number: 07031.MODN.01E  
Drawn By: BLS Date: 10-15-07  
Checked By: JCV Date: 10-15-07



## PICKETT RAY & SILVER

Civil Engineers Land Surveyors Natural Resources

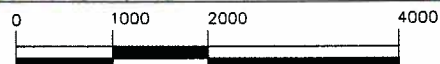
Address: 333 Mid Rivers Mall Drive  
St. Peters, Missouri 63376  
Phone: (636)397-1211  
Fax: (636)397-1104  
Website: www.prs3.com

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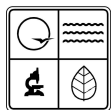
WBID #: 0613  
Name: W Fk Locust Creek  
County: Sullivan  
USGS Location Map

Sheet 4 of 4



**GRAPHIC SCALE**  
1 inch = 2000ft.

PRS Job Number: 07031.MODN.01E  
Drawn By: BLS Date: 10-15-07  
Checked By: JCV Date: 10-15-07



# Missouri Field Data Sheets for Recreational Use Stream Surveys

Department of

Natural Resources

## Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/18/07 14:00	Site Location Description (e.g., road crossing): Hwy ZZ Bridge
Personnel (Data Collectors): Jennifer Hrabik, Justyn Foth	
Current Weather Conditions: clear	Facility Name: PSF Locust Ridge
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118494
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

### Site Location:

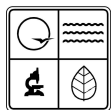
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0477271	Northing (UTM Y): 4461666	Horizontal Accuracy: (EPE / FOM / PDOP)	18 feet	
Site 11	Easting (UTM X): 0477302	Northing (UTM Y): 4461494	Horizontal Accuracy: (EPE / FOM / PDOP)	19 feet	

### Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_148	upstream	101_149	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

### Uses Observed\*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				



**Missouri Department of Natural Resources**  
**Field Data Sheets for Recreational Use Stream Surveys**  
**Data Sheet B – Site Characterization (continued)**

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use\*:** (Attach photos and reference in "Photos" section)

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: none				

**Substrate\*:** (These values should add up to 100%.)

% Cobble	% Gravel	95% Sand	% Silt	5% Mud/Clay	% Bedrock
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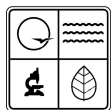
**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

algae
-------

**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Additional Stream Morphology:** (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

**Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.**

Surveyor's Signature: \_\_\_\_\_ Date of Survey: 9/18/07

Organization: Applied Environmental Solutions Position: Environmental Specialist

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

<div style="display: flex; align-items: center;"> <div> <p><b>Missouri Department of Natural Resources</b></p> <p>Waterbody ID: <u>613</u> Site #: <u>1</u></p> <p>Estimated Channel Incision: <u>1.5</u> (m) (height between low bank width and water)</p> <p>GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)</p> <p><b>01</b> UTM X: <u>477271</u> UTM Y: <u>4461666</u> +/- <u>18</u> (feet)</p> <p><b>11</b> UTM X: <u>477302</u> UTM Y: <u>4461494</u> +/- <u>19</u> (feet)</p> <p>Average Stream Width: <u>3.0</u> (meters) Length of Survey Segment: <u>150</u> (meters)</p> <p>(To determine Length of Reach) (20x average stream width)</p> <p>Field Staff: <u>Jennifer Hrabik and Justyn Foth</u></p> </div> </div>																Dissolved Oxygen					
																Date: <u>9/18/2007</u> Time: <u>14:00</u>					
																Dissolved Oxygen: <u>7.07</u> (mg/L)					
																Dissolved Oxygen: <u>94.7</u> (% sat)					
																Specific Cond: <u>258.2</u> (µS/cm)					
																Water Temperature: <u>21.5</u> (°C)					

Transect Cross-Section																						
01		02		03		04		05		06		07		08		09		10		11		
Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.40	0.13	0.25	0	0.27	0	0.15	0	0.52	0	0.19	0	0.14	0	0.23	0	0.03	0.01	0.48	0.08	0.50	0
2	0.80	0.24	0.50	0	0.54	0	0.30	0	1.04	0	0.38	0	0.28	0	0.46	0	0.06	0.01	0.96	0.03	1.00	0
3	1.20	0.20	0.75	0	0.81	0	0.45	0	1.56	0	0.57	0	0.42	0	0.69	0	0.09	0.01	1.44	0.04	1.50	0
4	1.60	0.19	1.00	0	1.08	0	0.60	0	2.08	0	0.76	0	0.56	0	0.92	0	0.12	0.01	1.92	0.02	2.00	0
5	2.00	0.18	1.25	0	1.35	0	0.75	0	2.60	0	0.95	0	0.70	0	1.15	0	0.15	0.01	2.40	0.01	2.50	0
6	2.40	0.15	1.50	0	1.62	0	0.90	0	3.12	0	1.14	0	0.84	0	1.38	0	0.18	0.01	2.88	0.05	3.00	0
7	2.80	0.10	1.75	0	1.89	0	1.05	0	3.64	0	1.33	0	0.98	0	1.61	0	0.21	0.01	3.36	0.03	3.50	0
8	3.20	0.09	2.00	0	2.16	0	1.20	0	4.16	0	1.52	0	1.12	0	1.84	0	0.24	0.01	3.84	0.09	4.00	0
9	3.60	0.06	2.25	0	2.43	0	1.35	0	4.68	0	1.71	0	1.26	0	2.07	0	0.27	0.01	4.32	0.15	4.50	0
Right Bank	4.00	0	2.50	0	2.70	0	1.50	0	5.20	0	1.95	0	1.40	0	2.30	0	0.35	0.00	4.80	0.00	5.00	0
Feature Type	Pool		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Pool		Pool		Dry	

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

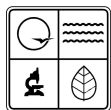
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



# Missouri Field Data Sheets for Recreational Use Stream Surveys

Department of

Natural Resources

## Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/18/07 14:30	Site Location Description (e.g., road crossing): Maple Rd.
Personnel (Data Collectors): Jennifer Hrabik, Justyn Foth	
Current Weather Conditions: clear	Facility Name: PSF Locust Ridge
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118494
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

### Site Location:

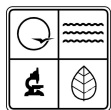
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0478275	Northing (UTM Y): 4459186	Horizontal Accuracy: (EPE / FOM / PDOP)	15 feet	
Site 11	Easting (UTM X): 0478365	Northing (UTM Y): 4459025	Horizontal Accuracy: (EPE / FOM / PDOP)	21 feet	

### Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_150	upstream	101_151	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

### Uses Observed\*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



**Missouri Department of Natural Resources**  
**Field Data Sheets for Recreational Use Stream Surveys**  
**Data Sheet B – Site Characterization (continued)**

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use\*:** (Attach photos and reference in "Photos" section)

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: none				

**Substrate\*:** (These values should add up to 100%.)

% Cobble	% Gravel	95% Sand	% Silt	5% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

none
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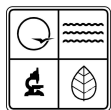
**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0613

Site # 2



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Additional Stream Morphology:** (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

**Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.**

Surveyor's Signature: \_\_\_\_\_ Date of Survey: 9/22/07

Organization: Applied Environmental Solutions Position: Environmental Specialist

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

<div style="display: inline-block; text-align: left;"> <b>Missouri</b>  <b>Department of</b>  <b>Natural Resources</b> </div> <div style="display: inline-block; vertical-align: top; margin-left: 20px;">             Site #: <u>2</u>              Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water)              GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)  <b>01</b> UTM X: <u>478275</u> UTM Y: <u>4459186</u> +/- <u>15</u> (feet)  <b>11</b> UTM X: <u>478365</u> UTM Y: <u>4459025</u> +/- <u>21</u> (feet)              Average Stream Width: <u>3.0</u> (meters) Length of Survey Segment: <u>150</u> (meters)              (To determine Length of Reach) (20x average stream width)              Field Staff: <u>Jennifer Hrabik and Justyn Foth</u> </div>																Dissolved Oxygen					
																Date: <u>9/18/2007</u> Time: <u>14:30</u>					
																Dissolved Oxygen: <u>8.22</u> (mg/L)					
																Dissolved Oxygen: <u>93.2</u> (% sat)					
																Specific Cond: <u>308.6</u> (µS/cm)					
																Water Temperature: <u>23.1</u> (°C)					

Transect Cross-Section																							
		01		02		03		04		05		06		07		08		09		10		11	
Station		Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
<b>Left Bank</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	0.13	0.02	0.47	0	0.32	0	0.38	0	0.50	0	0.25	0	0.26	0	0.52	0	0.16	0.04	0.22	0.10	0.33	0.14
	2	0.26	0.02	0.94	0	0.64	0	0.76	0	1.00	0	0.50	0	0.52	0	1.04	0	0.32	0.05	0.44	0.12	0.66	0.24
	3	0.39	0.04	1.41	0	0.96	0	1.14	0	1.50	0	0.75	0	0.78	0	1.56	0	0.48	0.06	0.66	0.20	0.99	0.20
	4	0.52	0.03	1.88	0	1.28	0	1.52	0	2.00	0	1.00	0	1.04	0	2.08	0	0.64	0.04	0.88	0.18	1.32	0.20
	5	0.65	0.04	2.35	0	1.60	0	1.90	0	2.50	0	1.25	0	1.30	0	2.60	0	0.80	0.02	1.10	0.14	1.65	0.33
	6	0.78	0.05	2.82	0	1.92	0	2.28	0	3.00	0	1.50	0	1.56	0	3.12	0	0.96	0.01	1.32	0.14	1.98	0.31
	7	0.91	0.04	3.29	0	2.24	0	2.66	0	3.50	0	1.75	0	1.82	0	3.64	0	1.12	0.01	1.54	0.11	2.31	0.21
	8	1.04	0.03	3.76	0	2.56	0	3.04	0	4.00	0	2.00	0	2.08	0	4.16	0	1.28	0.01	1.76	0.07	2.64	0.18
<b>Right Bank</b>	9	1.17	0.03	4.23	0	2.88	0	3.42	0	4.50	0	2.25	0	2.34	0	4.68	0	1.44	0.01	1.98	0.02	2.97	0.10
		1.30	0	4.75	0	3.25	0	3.80	0	5.00	0	2.50	0	2.60	0	5.20	0	1.60	0	2.25	0	3.35	0
<b>Feature Type</b> <small>(riffle, run, or pool)</small>		Pool		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Pool		Pool		Pool	

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

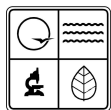
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



# Missouri Field Data Sheets for Recreational Use Stream Surveys

Department of

Natural Resources

## Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/18/07 15:20	Site Location Description (e.g., road crossing): Marble Rd.
Personnel (Data Collectors): Jennifer Hrabik, Justyn Foth	
Current Weather Conditions: cloudy	Facility Name: PSF Locust Ridge
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118494
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

### Site Location:

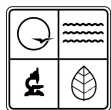
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0478854	Northing (UTM Y): 4457570	Horizontal Accuracy: (EPE / FOM / PDOP)	14 feet	
Site 11	Easting (UTM X): 0478836	Northing (UTM Y): 4457360	Horizontal Accuracy: (EPE / FOM / PDOP)	19 feet	

### Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_152	upstream	101_153	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

### Uses Observed\*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use\*:** (Attach photos and reference in "Photos" section)

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: none				

**Substrate\*:** (These values should add up to 100%.)

% Cobble	% Gravel	90% Sand	% Silt	10% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

Algae willow
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**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: brown
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Other: rust/iron
Surface Deposit:	<input checked="" type="checkbox"/> Oil	<input checked="" type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input type="checkbox"/> None	<input type="checkbox"/> Other:

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0613

Site # 3



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Additional Stream Morphology:** (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

**Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.**

Surveyor's Signature: \_\_\_\_\_ Date of Survey: 9/18/07

Organization: Applied Environmental Solutions Position: Environmental Specialists

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;"> <p><b>Missouri Department of Natural Resources</b></p> </div> <div> <p>Site #: <u>3</u></p> <p>Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water)</p> <p>GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)</p> <div style="display: flex; justify-content: space-between;"> <div> <p><b>01</b> UTM X: <u>478854</u> UTM Y: <u>4457570</u> +/- <u>14</u> (feet)</p> <p><b>11</b> UTM X: <u>478836</u> UTM Y: <u>4457360</u> +/- <u>19</u> (feet)</p> </div> </div> <p>Average Stream Width: <u>3.0</u> (meters) Length of Survey Segment: <u>150</u> (meters)</p> <p>(To determine Length of Reach) (20x average stream width)</p> <p>Field Staff: <u>Jennifer Hrabik and Justyn Foth</u></p> </div> </div>																<b>Dissolved Oxygen</b>							
																<p>Date: <u>9/18/2007</u> Time: <u>15:20</u></p> <p>Dissolved Oxygen: <u>10.09</u> (mg/L)</p> <p>Dissolved Oxygen: <u>121.0</u> (% sat)</p> <p>Specific Cond: <u>446.2</u> (µS/cm)</p> <p>Water Temperature: <u>23.6</u> (°C)</p>							
<b>Transect Cross-Section</b>																							
<b>01</b>		<b>02</b>		<b>03</b>		<b>04</b>		<b>05</b>		<b>06</b>		<b>07</b>		<b>08</b>		<b>09</b>		<b>10</b>		<b>11</b>			
Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0	0	0	0		
1	0.48	0.08	0.51	0.24	0.12	0.04	0.10	0.01	0.14	0.03	0.50	0.05	0.08	0.01	0.17	0.09	0.40	0.60	0.38	0.11	0.18	0.04	
2	0.96	0.14	1.02	0.46	0.24	0.05	0.20	0.01	0.28	0.03	1.00	0.24	0.16	0.03	0.34	0.12	0.80	>1	0.76	0.15	0.36	0.07	
3	1.44	0.23	1.53	0.60	0.36	0.05	0.30	0.01	0.42	0.03	1.50	0.35	0.24	0.04	0.51	0.15	1.20	>1	1.14	0.18	0.54	0.11	
4	1.92	0.28	2.04	0.59	0.48	0.05	0.40	0.01	0.56	0.01	2.00	0.42	0.32	0.02	0.68	0.18	1.60	>1	1.52	0.25	0.72	0.14	
5	2.40	0.29	2.55	0.46	0.60	0.05	0.50	0.00	0.70	0.00	2.50	0.45	0.40	0.02	0.85	0.17	2.00	>1	1.90	0.23	0.90	0.10	
6	2.88	0.30	3.06	0.36	0.72	0.05	0.60	0.00	0.84	0.00	3.00	0.30	0.48	0.03	1.02	0.14	2.40	>1	2.28	0.20	1.08	0.08	
7	3.36	0.31	3.57	0.22	0.84	0.04	0.70	0.00	0.98	0.01	3.50	0.20	0.56	0.03	1.19	0.14	2.80	>1	2.66	0.15	1.26	0.05	
8	3.84	0.32	4.08	0.11	0.96	0.04	0.80	0.01	1.12	0.02	4.00	0.16	0.64	0.05	1.36	0.12	3.20	>1	3.04	0.04	1.44	0.02	
9	4.32	0.20	4.59	0.10	1.08	0.03	0.90	0.01	1.26	0.02	4.50	0.12	0.72	0.01	1.53	0.08	3.60	0.76	3.42	0.01	1.62	0.01	
Right Bank	4.80	0	5.10	0	1.20	0	1.05	0	1.40	0	5.00	0	0.80	0.25	1.75	0	4.00	0.45	3.80	0	1.80	0	
Feature Type	Pool		Pool		Pool		Run		Run		Pool		Run		Run		Pool		Run		Run		

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

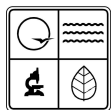
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



# Missouri Field Data Sheets for Recreational Use Stream Surveys

Department of

Natural Resources

## Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/19/07 8:40	Site Location Description (e.g., road crossing): Noel Rd.
Personnel (Data Collectors): Jennifer Hrabik, Justyn Foth	
Current Weather Conditions: clear	Facility Name: PSF Locust Ridge
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118494
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

### Site Location:

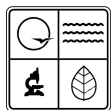
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0478903	Northing (UTM Y): 4455629	Horizontal Accuracy: (EPE / FOM / PDOP)	30 feet	
Site 11	Easting (UTM X): 0478876	Northing (UTM Y): 4455434	Horizontal Accuracy: (EPE / FOM / PDOP)	20 feet	

### Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_154	upstream	101_155	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

### Uses Observed\*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use\*:** (Attach photos and reference in "Photos" section)

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: none				

**Substrate\*:** (These values should add up to 100%.)

% Cobble	% Gravel	70% Sand	% Silt	30% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

Arrowhead Water primrose
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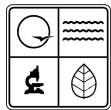
**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: brown
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0613

Site # 4



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Additional Stream Morphology:** (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

Rained last night

**Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.**

Surveyor's Signature: \_\_\_\_\_ Date of Survey: 9/19/07

Organization: Applied Environmental Solutions Position: Environmental Specialist

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

<div style="display: flex; align-items: center;"> <div> <p><b>Missouri Department of Natural Resources</b></p> <p>Site #: <u>4</u></p> <p>Estimated Channel Incision: <u>1.5</u> (m) (height between low bank width and water)</p> <p>GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;"><b>01</b></td> <td style="width: 15%;">UTM X: <u>478903</u></td> <td style="width: 15%;">UTM Y: <u>4455629</u></td> <td style="width: 10%;">+/- <u>30</u></td> <td style="width: 15%;">(feet)</td> </tr> <tr> <td><b>11</b></td> <td>UTM X: <u>478876</u></td> <td>UTM Y: <u>4455434</u></td> <td>+/- <u>20</u></td> <td>(feet)</td> </tr> </table> <p>Average Stream Width: <u>6.0</u> (meters)      Length of Survey Segment: <u>150</u> (meters)</p> <p>(To determine Length of Reach)      (20x average stream width)</p> <p>Field Staff: <u>Jennifer Hrabik and Justyn Foth</u></p> </div> </div>																<b>01</b>	UTM X: <u>478903</u>	UTM Y: <u>4455629</u>	+/- <u>30</u>	(feet)	<b>11</b>	UTM X: <u>478876</u>	UTM Y: <u>4455434</u>	+/- <u>20</u>	(feet)	Dissolved Oxygen					
<b>01</b>	UTM X: <u>478903</u>	UTM Y: <u>4455629</u>	+/- <u>30</u>	(feet)																											
<b>11</b>	UTM X: <u>478876</u>	UTM Y: <u>4455434</u>	+/- <u>20</u>	(feet)																											
																Date: <u>9/19/2007</u> Time: <u>8:40</u>															
																Dissolved Oxygen: <u>4.19</u> (mg/L)															
																Dissolved Oxygen: <u>45.5</u> (% sat)															
																Specific Cond: <u>225.4</u> (µS/cm)															
																Water Temperature: <u>19.1</u> (°C)															

Transect Cross-Section																						
01		02		03		04		05		06		07		08		09		10		11		
Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.35	0.04	0.61	0.05	0.56	0.19	0.50	0.30	0.78	0.20	0.78	0.22	0.56	0.10	0.57	0.11	0.44	0.14	0.62	0.10	0.70	0.27
2	0.71	0.08	1.22	0.08	1.12	0.25	1.00	0.50	1.56	0.23	1.56	0.23	1.12	0.25	1.14	0.12	0.89	0.26	1.25	0.28	1.40	0.90
3	1.06	0.09	1.83	0.09	1.68	0.27	1.50	0.47	2.34	0.27	2.34	0.21	1.68	0.45	1.71	0.28	1.33	0.35	1.87	0.37	2.10	0.85
4	1.42	0.05	2.44	0.07	2.24	0.35	2.00	0.26	3.12	0.24	3.12	0.24	2.24	0.68	2.28	0.30	1.78	0.30	2.50	0.40	2.80	0.81
5	1.77	0.03	3.05	0.05	2.80	0.36	2.50	0.41	3.90	0.24	3.90	0.30	2.80	0.50	2.85	0.36	2.22	0.40	3.12	0.31	3.50	0.72
6	2.13	0.02	3.66	0.15	3.36	0.28	3.00	0.24	4.68	0.14	4.68	0.44	3.36	0.54	3.42	0.48	2.67	0.51	3.75	0.28	4.20	0.50
7	2.48	0.02	4.27	0.22	3.92	0.15	3.50	0.16	5.46	0.12	5.46	0.65	3.92	0.40	3.99	0.59	3.11	0.22	4.37	0.25	4.90	0.35
8	2.84	0.00	4.88	0.28	4.48	0.11	4.00	0.09	6.24	0.15	6.24	0.60	4.48	0.21	4.56	0.33	3.56	0.08	5.00	0.29	5.60	0.29
9	3.19	0.01	5.49	0.34	5.04	0.08	4.50	0.05	7.02	0.10	7.02	0.35	5.04	0.08	5.13	0.18	4.00	0.03	5.62	0.24	6.30	0.11
Right Bank	3.55	0	6.10	0	5.60	0	5.00	0	7.80	0	7.80	0	5.60	0	5.70	0	4.45	0	6.25	0	7.00	0
Feature Type	Run		Run		Pool		Run		Run		Run		Pool		Pool		Run		Pool		Pool	

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

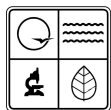
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization**

(must be completed for each site)

Date & Time: 9/19/07 9:30	Site Location Description (e.g., road crossing): Hwy E Bridge
Personnel (Data Collectors): Jennifer Hrabik, Justyn Foth	
Current Weather Conditions: clear	Facility Name: PSF Locust Ridge
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118494
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

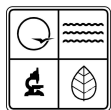
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 478960	Northing (UTM Y): 4453527	Horizontal Accuracy: (EPE / FOM / PDOP)	17 feet
Site 11	Easting (UTM X): 478957	Northing (UTM Y): 4453307	Horizontal Accuracy: (EPE / FOM / PDOP)	24 feet

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_156	upstream	101_157	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

**Uses Observed\*:** (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use\*:** (Attach photos and reference in "Photos" section)

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: none				

**Substrate\*:** (These values should add up to 100%.)

% Cobble	1% Gravel	80% Sand	% Silt	19% Mud/Clay	% Bedrock
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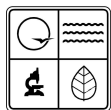
**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

Willows Duckweed
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**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: brown
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.



**Missouri Department of Natural Resources**  
**Field Data Sheets for Recreational Use Stream Surveys**  
**Data Sheet B – Site Characterization (continued)**

**Additional Stream Morphology:** (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

Rained last night


**Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.**

Surveyor's Signature: \_\_\_\_\_ Date of Survey: 9/19/07

Organization: Applied Environmental Solutions Position: Environmental Specialist

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">  <p><b>Missouri</b> <b>Department of</b> <b>Natural Resources</b></p> </div> <div> <p>Site #: <u>5</u></p> <p>Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water)</p> <p>GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)</p> <table style="width: 100%;"> <tr> <td><b>01</b></td> <td>UTM X: <u>478960</u></td> <td>UTM Y: <u>4453527</u></td> <td>+/-</td> <td><u>17</u></td> <td>(feet)</td> </tr> <tr> <td><b>11</b></td> <td>UTM X: <u>478957</u></td> <td>UTM Y: <u>4453307</u></td> <td>+/-</td> <td><u>24</u></td> <td>(feet)</td> </tr> </table> <p>Average Stream Width: <u>7.0</u> (meters)      Length of Survey Segment: <u>150</u> (meters)</p> <p>(To determine Length of Reach)      (20x average stream width)</p> <p>Field Staff: <u>Jennifer Hrabik and Justyn Foth</u></p> </div> </div>																<b>01</b>	UTM X: <u>478960</u>	UTM Y: <u>4453527</u>	+/-	<u>17</u>	(feet)	<b>11</b>	UTM X: <u>478957</u>	UTM Y: <u>4453307</u>	+/-	<u>24</u>	(feet)	Dissolved Oxygen					
<b>01</b>	UTM X: <u>478960</u>	UTM Y: <u>4453527</u>	+/-	<u>17</u>	(feet)																												
<b>11</b>	UTM X: <u>478957</u>	UTM Y: <u>4453307</u>	+/-	<u>24</u>	(feet)																												
																Date: <u>9/19/2007</u> Time: <u>9:30</u>																	
																Dissolved Oxygen: <u>6.59</u> (mg/L)																	
																Dissolved Oxygen: <u>70.6</u> (% sat)																	
																Specific Cond: <u>318.0</u> (µS/cm)																	
																Water Temperature: <u>18.6</u> (°C)																	

Transect Cross-Section																						
01		02		03		04		05		06		07		08		09		10		11		
Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	
0	0	0	0	0	0	0	0	0	0.55	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.83	0.17	0.59	0.20	0.65	0.35	0.79	0.55	0.72	0.59	0.51	0.11	0.60	0.08	0.70	0.56	0.57	0.16	0.36	0.09	0.97	0.18
2	1.66	0.12	1.19	0.17	1.30	0.45	1.58	0.52	1.44	0.50	1.02	0.18	1.21	0.19	1.40	0.30	1.14	0.20	0.72	0.20	1.95	0.25
3	2.49	0.14	1.78	0.22	1.95	0.62	2.37	0.55	2.16	0.32	1.53	0.09	1.81	0.19	2.10	0.35	1.71	0.30	1.08	0.31	2.92	0.25
4	3.32	0.13	2.38	0.24	2.60	0.64	3.16	0.46	2.88	0.29	2.04	0.02	2.42	0.20	2.80	0.22	2.28	0.37	1.44	0.38	3.90	0.31
5	4.15	0.00	2.97	0.20	3.25	0.61	3.95	0.38	3.60	0.21	2.55	0.18	3.02	0.20	3.50	0.20	2.85	0.46	1.80	0.39	4.87	0.30
6	4.98	0.00	3.57	0.18	3.90	0.66	4.74	0.20	4.32	0.20	3.06	0.19	3.63	0.28	4.20	0.26	3.42	0.55	2.16	0.49	5.85	0.33
7	5.81	0.00	4.16	0.14	4.55	0.64	5.53	0.19	5.04	0.20	3.57	0.24	4.23	0.33	4.90	0.30	3.99	0.54	2.52	0.40	6.82	0.31
8	6.64	0.25	4.76	0.15	5.20	0.46	6.32	0.19	5.76	0.16	4.08	0.25	4.84	0.30	5.60	0.34	4.56	0.60	2.88	0.20	7.80	0.35
9	7.47	0.18	5.35	0.14	5.85	0.18	7.11	0.06	6.48	0.08	4.59	0.30	5.44	0.18	6.30	0.31	5.13	0.28	3.24	0.10	8.77	0.15
Right Bank	8.30	0	5.95	0	6.50	0	7.90	0	7.20	0	5.10	0	6.05	0	7.00	0	5.70	0	3.60	0	9.75	0
Feature Type	Run	Run	Pool	Pool	Pool	Run	Run	Pool	Pool	Run	Run	Pool	Pool	Run	Pool	Run	Pool					

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

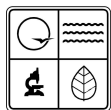
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



# Missouri Field Data Sheets for Recreational Use Stream Surveys

Department of

Natural Resources

## Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/19/07 10:00	Site Location Description (e.g., road crossing): 150m downstream of site 05
Personnel (Data Collectors): Jennifer Hrabik, Justyn Foth	
Current Weather Conditions: clear	Facility Name: PSF Locust Ridge
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118494
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

### Site Location:

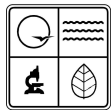
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0478950	Northing (UTM Y): 4453179	Horizontal Accuracy: (EPE / FOM / PDOP)	23 feet	
Site 11	Easting (UTM X): 0478939	Northing (UTM Y): 4452987	Horizontal Accuracy: (EPE / FOM / PDOP)	19 feet	

### Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_158	upstream	101_159	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

### Uses Observed\*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use\*:** (Attach photos and reference in "Photos" section)

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: none				

**Substrate\*:** (These values should add up to 100%.)

% Cobble	% Gravel	80% Sand	% Silt	20% Mud/Clay	% Bedrock
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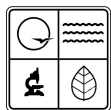
**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

algae
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**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Additional Stream Morphology:** (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

Rained last night

**Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.**

Surveyor's Signature: \_\_\_\_\_ Date of Survey: 9/19/07

Organization: Applied Environmental Solutions Position: Environmental Specialist

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

<div style="display: inline-block; text-align: left;"> <b>Missouri</b>  <b>Department of</b>  <b>Natural Resources</b> </div> <div style="display: inline-block; vertical-align: top; margin-left: 20px;">             Site #: <u>6</u>              Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water)              GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;"><b>01</b></td> <td style="width: 15%;">UTM X: <u>478950</u></td> <td style="width: 15%;">UTM Y: <u>4453179</u></td> <td style="width: 10%;">+/- <u>23</u></td> <td style="width: 15%;">(feet)</td> </tr> <tr> <td><b>11</b></td> <td>UTM X: <u>478939</u></td> <td>UTM Y: <u>4452987</u></td> <td>+/- <u>19</u></td> <td>(feet)</td> </tr> </table> </div>																<b>01</b>	UTM X: <u>478950</u>	UTM Y: <u>4453179</u>	+/- <u>23</u>	(feet)	<b>11</b>	UTM X: <u>478939</u>	UTM Y: <u>4452987</u>	+/- <u>19</u>	(feet)	Dissolved Oxygen					
<b>01</b>	UTM X: <u>478950</u>	UTM Y: <u>4453179</u>	+/- <u>23</u>	(feet)																											
<b>11</b>	UTM X: <u>478939</u>	UTM Y: <u>4452987</u>	+/- <u>19</u>	(feet)																											
																Date: <u>9/19/2007</u> Time: <u>10:00</u>															
																Dissolved Oxygen: <u>5.09</u> (mg/L)															
																Dissolved Oxygen: <u>55.5</u> (% sat)															
																Specific Cond: <u>353.9</u> (µS/cm)															
																Water Temperature: <u>19.7</u> (°C)															
Average Stream Width: <u>3.2</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width)																															
Field Staff: <u>Jennifer Hrabik and Justyn Foth</u>																															

Transect Cross-Section																						
01		02		03		04		05		06		07		08		09		10		11		
Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.25	0.08	0.24	0.15	0.78	0.16	0.30	0.08	0.28	0.01	0.51	0.11	0.37	0.08	0.25	0.07	0.12	0.03	0.23	0.03	0.46	0.08
2	0.50	0.05	0.48	0.17	1.56	0.12	0.60	0.13	0.56	0.02	1.02	0.23	0.74	0.13	0.50	0.10	0.24	0.05	0.46	0.05	0.92	0.11
3	0.75	0.06	0.72	0.15	2.34	0.04	0.90	0.15	0.84	0.07	1.53	0.16	1.11	0.12	0.75	0.10	0.36	0.06	0.69	0.09	1.38	0.09
4	1.00	0.04	0.96	0.13	3.12	0.16	1.20	0.06	1.12	0.11	2.04	0.16	1.48	0.11	1.00	0.10	0.48	0.05	0.92	0.10	1.84	0.12
5	1.25	0.05	1.20	0.10	3.90	0.22	1.50	0.05	1.40	0.16	2.55	0.17	1.85	0.15	1.25	0.08	0.60	0.05	1.15	0.10	2.30	0.13
6	1.50	0.05	1.44	0.09	4.68	0.29	1.80	0.14	1.68	0.17	3.06	0.19	2.22	0.09	1.50	0.07	0.72	0.04	1.38	0.08	2.76	0.10
7	1.75	0.09	1.68	0.08	5.46	0.20	2.10	0.15	1.96	0.15	3.57	0.15	2.59	0.06	1.75	0.06	0.84	0.05	1.61	0.06	3.22	0.07
8	2.00	0.08	1.92	0.05	6.24	0.14	2.40	0.12	2.24	0.12	4.08	0.10	2.96	0.02	2.00	0.04	0.96	0.03	1.84	0.03	3.68	0.04
9	2.25	0.04	2.16	0.03	7.02	0.25	2.70	0.04	2.52	0.09	4.59	0.08	3.33	0.02	2.25	0.02	1.08	0.02	2.07	0.01	4.14	0.02
Right Bank	2.50	0	2.40	0	7.80	0	3.00	0	2.80	0	5.10	0	3.70	0	2.50	0	1.20	0	2.30	0	4.60	0
Feature Type	Run		Run		Run		Run		Run		Run		Run		Run		Riffle		Run		Run	

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

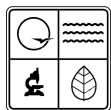
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization**

(must be completed for each site)

Date & Time: 9/19/07 11:00	Site Location Description (e.g., road crossing): Hwy. PP Bridge
Personnel (Data Collectors): Jennifer Hrabik, Justyn Foth	
Current Weather Conditions: clear	Facility Name: PSF Locust Ridge
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118494
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

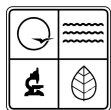
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0478745	Northing (UTM Y): 4449921	Horizontal Accuracy: (EPE / FOM / PDOP)	16 feet	
Site 11	Easting (UTM X): 0478682	Northing (UTM Y): 4449705	Horizontal Accuracy: (EPE / FOM / PDOP)	22 feet	

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_161	upstream	101_162	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

**Uses Observed\*:** (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use\*:** (Attach photos and reference in "Photos" section)

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: none				

**Substrate\*:** (These values should add up to 100%.)

% Cobble	% Gravel	60% Sand	% Silt	40% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

none
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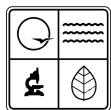
**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: brown
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0613

Site # 7



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Additional Stream Morphology:** (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

Rained last night

**Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.**

Surveyor's Signature: \_\_\_\_\_ Date of Survey: 9/19/07

Organization: Applied Environmental Solutions Position: Environmental Specialist

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

<div style="display: flex; align-items: center;"> <div> <p><b>Missouri Department of Natural Resources</b></p> <p>Site #: <u>7</u></p> <p>Estimated Channel Incision: <u>2.5</u> (m) (height between low bank width and water)</p> <p>GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;"><b>01</b></td> <td style="width: 15%;">UTM X: <u>478745</u></td> <td style="width: 15%;">UTM Y: <u>4449921</u></td> <td style="width: 10%;">+/- <u>16</u></td> <td style="width: 15%;">(feet)</td> </tr> <tr> <td><b>11</b></td> <td>UTM X: <u>478682</u></td> <td>UTM Y: <u>4449705</u></td> <td>+/- <u>22</u></td> <td>(feet)</td> </tr> </table> <p>Average Stream Width: <u>8.0</u> (meters)      Length of Survey Segment: <u>160</u> (meters)</p> <p>(To determine Length of Reach)      (20x average stream width)</p> <p>Field Staff: <u>Jennifer Hrabik and Justyn Foth</u></p> </div> </div>																<b>01</b>	UTM X: <u>478745</u>	UTM Y: <u>4449921</u>	+/- <u>16</u>	(feet)	<b>11</b>	UTM X: <u>478682</u>	UTM Y: <u>4449705</u>	+/- <u>22</u>	(feet)	Dissolved Oxygen					
<b>01</b>	UTM X: <u>478745</u>	UTM Y: <u>4449921</u>	+/- <u>16</u>	(feet)																											
<b>11</b>	UTM X: <u>478682</u>	UTM Y: <u>4449705</u>	+/- <u>22</u>	(feet)																											
																Date: <u>9/19/2007</u> Time: <u>11:00</u>															
																Dissolved Oxygen: <u>4.64</u> (mg/L)															
																Dissolved Oxygen: <u>49.6</u> (% sat)															
																Specific Cond: <u>315.3</u> (µS/cm)															
																Water Temperature: <u>18.9</u> (°C)															

Transect Cross-Section																						
01		02		03		04		05		06		07		08		09		10		11		
Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	
0	0	0	0	0	0.31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.58	0.50	1.00	0.30	0.98	0.31	1.10	0.35	1.10	0.18	1.20	0.60	1.20	0.50	1.20	0.55	0.50	0.03	0.07	0.02	0.18	0.01
2	1.16	0.78	2.00	0.64	1.96	0.45	2.20	0.50	2.20	0.25	2.40	>1	2.40	>1	2.40	>1	1.00	0.02	0.14	0.01	0.36	0.02
3	1.74	0.98	3.00	0.85	2.94	0.50	3.30	0.44	3.30	0.22	3.60	>1	3.60	>1	3.60	>1	1.50	0.04	0.21	0.02	0.54	0.01
4	2.32	1.00	4.00	0.92	3.92	0.50	4.40	0.60	4.40	0.31	4.80	0.94	4.80	>1	4.80	>1	2.00	0.02	0.28	0.03	0.72	0.01
5	2.90	0.83	5.00	0.87	4.90	0.54	5.50	0.44	5.50	0.23	6.00	0.90	6.00	0.90	6.00	0.95	2.50	0.00	0.35	0.03	0.90	0.01
6	3.48	0.55	6.00	0.85	5.88	0.46	6.60	0.36	6.60	0.26	7.20	0.98	7.20	0.88	7.20	0.89	3.00	0.00	0.42	0.04	1.08	0.01
7	4.06	0.36	7.00	0.76	6.86	0.41	7.70	0.25	7.70	0.31	8.40	0.92	8.40	0.87	8.40	0.84	3.50	0.09	0.49	0.03	1.26	0.02
8	4.64	0.15	8.00	0.62	7.84	0.38	8.80	0.21	8.80	0.30	9.60	0.83	9.60	0.75	9.60	0.80	4.00	0.11	0.56	0.02	1.44	0.02
9	5.22	0.08	9.00	0.33	8.82	0.33	9.90	0.16	9.90	0.32	10.80	0.50	10.80	0.50	10.80	0.60	4.50	0.12	0.63	0.01	1.62	0.02
Right Bank	5.80	0	10.00	0	9.80	0	11.00	0	11.20	0	12.00	0	12.00	0	12.00	0	5.00	0	0.70	0	1.80	0
Feature Type	Pool		Pool		Pool		Pool		Pool		Pool		Pool		Pool		Run		Riffle		Run	

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

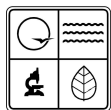
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



# Missouri Field Data Sheets for Recreational Use Stream Surveys

Department of

Natural Resources

## Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/19/07 11:45	Site Location Description (e.g., road crossing): 150m downstream of site 07
Personnel (Data Collectors): Jennifer Hrabik, Justyn Foth	
Current Weather Conditions: clear	Facility Name: PSF Locust Ridge
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118494
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

### Site Location:

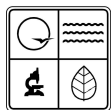
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0478617	Northing (UTM Y): 4449534	Horizontal Accuracy: (EPE / FOM / PDOP)	19 feet	
Site 11	Easting (UTM X): 0478648	Northing (UTM Y): 4449348	Horizontal Accuracy: (EPE / FOM / PDOP)	22 feet	

### Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_163	upstream	101_164	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

### Uses Observed\*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use\*:** (Attach photos and reference in "Photos" section)

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: none				

**Substrate\*:** (These values should add up to 100%.)

% Cobble	% Gravel	60% Sand	% Silt	40% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

Duckweed Algae
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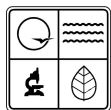
**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: brown
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0613

Site # 8



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Additional Stream Morphology:** (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

Rained last night

**Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.**

Surveyor's Signature: \_\_\_\_\_ Date of Survey: 9/19/07

Organization: Applied Environmental Solutions Position: Environmental Specialist

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

<div style="display: inline-block; vertical-align: top;"> <p><b>Missouri</b> <b>Department of</b> <b>Natural Resources</b></p> <p>Site #: <u>8</u></p> <p>Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water)</p> <p>GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)</p> <p><b>01</b> UTM X: <u>478617</u> UTM Y: <u>4449534</u> +/- <u>19</u> (feet)</p> <p><b>11</b> UTM X: <u>478648</u> UTM Y: <u>4449348</u> +/- <u>22</u> (feet)</p> <p>Average Stream Width: <u>3.5</u> (meters) Length of Survey Segment: <u>150</u> (meters)</p> <p>(To determine Length of Reach) (20x average stream width)</p> <p>Field Staff: <u>Jennifer Hrabik and Justyn Foth</u></p> </div>																Dissolved Oxygen					
																Date: <u>9/19/2007</u> Time: <u>11:45</u>					
																Dissolved Oxygen: <u>1.51</u> (mg/L)					
																Dissolved Oxygen: <u>18.1</u> (% sat)					
																Specific Cond: <u>305.8</u> (µS/cm)					
																Water Temperature: <u>18.8</u> (°C)					

Transect Cross-Section																						
01		02		03		04		05		06		07		08		09		10		11		
Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.50	0.20	0.47	0.14	0.24	0.01	0.38	0.04	0.19	0.03	0.08	0.01	0.50	0.11	0.24	0.04	0.68	0.10	0.47	0.12	0.15	0.01
2	1.00	0.55	0.94	0.19	0.48	0.01	0.76	0.08	0.38	0.16	0.16	0.02	1.00	0.21	0.48	0.06	1.36	0.10	0.94	0.19	0.30	0.01
3	1.50	0.79	1.41	0.25	0.72	0.01	1.14	0.09	0.57	0.18	0.24	0.02	1.50	0.32	0.72	0.31	2.04	0.08	1.41	0.19	0.45	0.01
4	2.00	0.53	1.88	0.21	0.96	0	1.52	0.14	0.76	0.20	0.32	0.02	2.00	0.51	0.96	0.30	2.72	0.09	1.88	0.26	0.60	0.02
5	2.50	0.31	2.35	0.18	1.20	0	1.90	0.19	0.95	0.21	0.40	0.03	2.50	0.54	1.20	0.15	3.40	0.10	2.35	0.21	0.75	0.02
6	3.00	0.25	2.82	0.16	1.44	0	2.28	0.22	1.14	0.20	0.48	0.02	3.00	0.44	1.44	0.10	4.08	0.05	2.82	0.20	0.90	0.01
7	3.50	0.10	3.29	0.11	1.68	0	2.66	0.24	1.33	0.17	0.56	0.01	3.50	0.28	1.68	0.17	4.76	0.11	3.29	0.21	1.05	0
8	4.00	0.06	3.76	0.07	1.92	0	3.04	0.21	1.52	0.12	0.64	0.01	4.00	0.11	1.92	0.04	5.44	0.15	3.76	0.18	1.20	0.01
9	4.50	0.03	4.23	0.04	2.16	0.01	3.42	0.20	1.71	0.08	0.72	0.01	4.50	0.04	2.16	0.01	6.12	0.27	4.23	0.15	1.35	0.01
5.00	0	4.70	0	2.40	0	3.80	0	1.95	0	0.84	0	5.00	0	2.40	0	6.80	0	4.70	0	1.50	0	
Pool		Run		Riffle		Run		Run		Run		Pool		Pool		Run		Pool		Run		

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

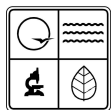
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization**

(must be completed for each site)

Date & Time: 9/19/07 13:20	Site Location Description (e.g., road crossing): Collins Rd.
Personnel (Data Collectors): Jennifer Hrabik, Justyn Foth	
Current Weather Conditions: clear	Facility Name: PSF Locust Ridge
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118494
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

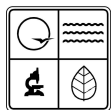
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0480749	Northing (UTM Y): 4446270	Horizontal Accuracy: (EPE / FOM / PDOP)	16 feet	
Site 11	Easting (UTM X): 0480856	Northing (UTM Y): 4446126	Horizontal Accuracy: (EPE / FOM / PDOP)	19 feet	

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_165	upstream	101_166	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

**Uses Observed\*:** (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use\*:** (Attach photos and reference in "Photos" section)

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: none				

**Substrate\*:** (These values should add up to 100%.)

% Cobble	% Gravel	70% Sand	% Silt	30% Mud/Clay	% Bedrock
----------	----------	----------	--------	--------------	-----------

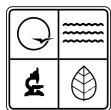
**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

Duckweed Algae arrowhead
--------------------------------

**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: brown
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Additional Stream Morphology:** (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

Rained last night

Spoke to DNR biologists doing work at this site, and they commented that a few weeks ago there was very little to no water in streams, but now there are large pools due to beaver dams.

**Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.**

Surveyor's Signature: \_\_\_\_\_ Date of Survey: 9/19/07

Organization: Applied Environmental Solutions Position: Environmental Specialist

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

<div style="display: inline-block; vertical-align: top;"> <p><b>Missouri</b> <b>Department of</b> <b>Natural Resources</b></p> <p>Site #: <u>          9          </u></p> <p>Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water)</p> <p>GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;"><b>01</b></td> <td style="width: 15%;">UTM X: <u>480749</u></td> <td style="width: 15%;">UTM Y: <u>4446270</u></td> <td style="width: 10%;">+/- <u>16</u></td> <td style="width: 15%;">(feet)</td> </tr> <tr> <td><b>11</b></td> <td>UTM X: <u>480856</u></td> <td>UTM Y: <u>4446126</u></td> <td>+/- <u>19</u></td> <td>(feet)</td> </tr> </table> <p>Average Stream Width: <u>6.0</u> (meters)      Length of Survey Segment: <u>150</u> (meters)</p> <p>(To determine Length of Reach)      (20x average stream width)</p> <p>Field Staff: <u>Jennifer Hrabik and Justyn Foth</u></p> </div>																<b>01</b>	UTM X: <u>480749</u>	UTM Y: <u>4446270</u>	+/- <u>16</u>	(feet)	<b>11</b>	UTM X: <u>480856</u>	UTM Y: <u>4446126</u>	+/- <u>19</u>	(feet)	<b>Dissolved Oxygen</b>					
<b>01</b>	UTM X: <u>480749</u>	UTM Y: <u>4446270</u>	+/- <u>16</u>	(feet)																											
<b>11</b>	UTM X: <u>480856</u>	UTM Y: <u>4446126</u>	+/- <u>19</u>	(feet)																											
																Date: <u>9/19/2007</u> Time: <u>13:20</u>															
																Dissolved Oxygen: <u>10.71</u> (mg/L)															
																Dissolved Oxygen: <u>143.4</u> (% sat)															
																Specific Cond: <u>337.5</u> (µS/cm)															
																Water Temperature: <u>30.8</u> (°C)															

Transect Cross-Section																						
01		02		03		04		05		06		07		08		09		10		11		
Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.24	0.01	0.26	0.06	1.00	0.46	1.00	0.51	1.00	0.21	0.78	0.08	0.25	0.04	0.26	0.04	0.59	0.25	0.67	0.04	0.71	0.30
2	0.48	0.01	0.52	0.10	2.00	0.58	2.00	0.57	2.00	0.25	1.56	0.10	0.50	0.06	0.52	0.06	1.18	0.29	1.34	0.08	1.42	0.40
3	0.72	0.01	0.78	0.10	3.00	0.61	3.00	0.63	3.00	0.26	2.34	0.11	0.75	0.10	0.78	0.10	1.77	0.29	2.01	0.09	2.13	0.35
4	0.96	0.00	1.04	0.09	4.00	0.70	4.00	0.69	4.00	0.22	3.12	0.12	1.00	0.11	1.04	0.13	2.36	0.20	2.68	0.12	2.84	0.27
5	1.20	0.03	1.30	0.02	5.00	0.80	5.00	0.81	5.00	0.21	3.90	0.13	1.25	0.16	1.30	0.18	2.95	0.16	3.35	0.13	3.55	0.31
6	1.44	0.02	1.56	0.11	6.00	0.75	6.00	0.72	6.00	0.25	4.68	0.15	1.50	0.21	1.56	0.21	3.54	0.14	4.02	0.16	4.26	0.30
7	1.68	0.01	1.82	0.05	7.00	0.74	7.00	0.75	7.00	0.19	5.46	0.17	1.75	0.21	1.82	0.21	4.13	0.17	4.69	0.26	4.97	0.30
8	1.92	0.01	2.08	0.07	8.00	0.65	8.00	0.61	8.00	0.21	6.24	0.15	2.00	0.18	2.08	0.19	4.72	0.21	5.36	0.26	5.68	0.28
9	2.16	0.01	2.34	0.06	9.00	0.45	9.00	0.40	9.00	0.28	7.02	0.08	2.25	0.12	2.34	0.08	5.31	0.24	6.03	0.24	6.39	0.24
Right Bank	2.40	0	2.60	0	10.00	0	10.05	0	10.00	0	7.80	0	2.50	0	2.60	0	5.90	0	6.70	0	7.10	0
Feature Type	Run	Pool	Pool	Pool	Pool	Run	Run	Run	Run	Run	Run	Run	Run	Run	Run	Run	Run	Run	Run	Run	Run	Run

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

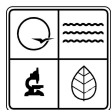
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



# Missouri Field Data Sheets for Recreational Use Stream Surveys

## Department of Natural Resources

### Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/19/07 14:10	Site Location Description (e.g., road crossing): Redwood Rd.
Personnel (Data Collectors): Jennifer Hrabik, Justyn Foth	
Current Weather Conditions: clear	Facility Name: PSF Locust Ridge
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118494
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

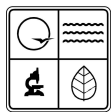
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0481702	Northing (UTM Y): 4445095	Horizontal Accuracy: (EPE / FOM / PDOP)	16 feet	
Site 11	Easting (UTM X): 0481623	Northing (UTM Y): 4444939	Horizontal Accuracy: (EPE / FOM / PDOP)	17 feet	

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_167	upstream	101_168	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

**Uses Observed\*:** (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use\*:** (Attach photos and reference in "Photos" section)

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: none				

**Substrate\*:** (These values should add up to 100%.)

% Cobble	% Gravel	30% Sand	% Silt	70% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

Algae arrowhead
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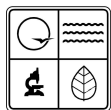
**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: brown
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

\*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0613

Site # 10



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Data Sheet B – Site Characterization (continued)**

**Additional Stream Morphology:** (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

Rained last night

**Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.**

Surveyor's Signature: \_\_\_\_\_ Date of Survey: 9/19/07

Organization: Applied Environmental Solutions Position: Environmental Specialist

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

<div style="display: flex; align-items: center;"> <div> <p><b>Missouri Department of Natural Resources</b></p> <p>Waterbody ID: <u>613</u> Site #: <u>10</u></p> <p>Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water)</p> <p>GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;"><b>01</b></td> <td style="width: 20%;">UTM X: <u>481702</u></td> <td style="width: 20%;">UTM Y: <u>4445095</u></td> <td style="width: 10%;">+/- <u>16</u></td> <td style="width: 10%;">(feet)</td> </tr> <tr> <td><b>11</b></td> <td>UTM X: <u>481623</u></td> <td>UTM Y: <u>4444939</u></td> <td>+/- <u>17</u></td> <td>(feet)</td> </tr> </table> <p>Average Stream Width: <u>8.0</u> (meters) Length of Survey Segment: <u>160</u> (meters)</p> <p>(To determine Length of Reach) (20x average stream width)</p> <p>Field Staff: <u>Jennifer Hrabik and Justyn Foth</u></p> </div> </div>																<b>01</b>	UTM X: <u>481702</u>	UTM Y: <u>4445095</u>	+/- <u>16</u>	(feet)	<b>11</b>	UTM X: <u>481623</u>	UTM Y: <u>4444939</u>	+/- <u>17</u>	(feet)	Dissolved Oxygen					
<b>01</b>	UTM X: <u>481702</u>	UTM Y: <u>4445095</u>	+/- <u>16</u>	(feet)																											
<b>11</b>	UTM X: <u>481623</u>	UTM Y: <u>4444939</u>	+/- <u>17</u>	(feet)																											
																Date: <u>9/19/2007</u> Time: <u>14:10</u>															
																Dissolved Oxygen: <u>5.58</u> (mg/L)															
																Dissolved Oxygen: <u>67.5</u> (% sat)															
																Specific Cond: <u>338.2</u> (µS/cm)															
																Water Temperature: <u>23.7</u> (°C)															

Transect Cross-Section																							
01		02		03		04		05		06		07		08		09		10		11			
Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1	1.00	0.23	0.11	0.25	0.78	0.26	0.67	0.37	0.27	0.04	0.65	0.12	0.80	0.10	0.11	0.61	0.90	0.55	0.61	0.30	0.58	0.10	
2	2.00	0.56	0.22	0.41	1.56	0.49	1.34	0.55	0.54	0.05	1.30	0.14	1.60	0.16	0.22	0.64	1.80	>1	1.22	0.35	1.16	0.15	
3	3.00	0.60	0.33	0.42	2.34	0.56	2.01	0.54	0.81	0.07	1.95	0.15	2.40	0.22	0.33	0.51	2.70	>1	1.83	0.28	1.74	0.22	
4	4.00	0.61	0.44	0.38	3.12	0.54	2.68	0.52	1.08	0.09	2.60	0.20	3.20	0.21	0.44	0.35	3.60	0.75	2.44	0.23	2.32	0.26	
5	5.00	0.65	0.55	0.35	3.90	0.48	3.35	0.40	1.35	0.09	3.25	0.18	4.00	0.15	0.55	0.28	4.50	0.71	3.05	0.20	2.90	0.30	
6	6.00	0.58	0.66	0.40	4.68	0.42	4.02	0.30	1.62	0.09	3.90	0.19	4.80	0.20	0.66	0.21	5.40	0.55	3.66	0.22	3.48	0.35	
7	7.00	0.55	0.77	0.50	5.46	0.35	4.69	0.16	1.89	0.08	4.55	0.22	5.60	0.19	0.77	0.24	6.30	0.52	4.27	0.21	4.06	0.31	
8	8.00	0.55	0.88	0.62	6.24	0.15	5.36	0.08	2.16	0.09	5.20	0.20	6.40	0.21	0.88	0.21	7.20	0.40	4.88	0.40	4.64	0.24	
9	9.00	0.50	0.99	0.63	7.02	0.08	6.03	0.03	2.43	0.06	5.85	0.11	7.20	0.23	0.99	0.15	8.10	0.33	5.49	0.43	5.22	0.12	
10	10.00	0.60	11.20	0	7.80	0	6.70	0	2.75	0	6.50	0	8.00	0	11.30	0	9.00	0	6.10	0	5.80	0	
Feature Type		Pool		Pool		Pool		Pool		Run		Pool		Pool		Pool		Pool		Pool		Pool	

(rifle, run, or pool)

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

**WBID# 0613**



**Site# 1 Photo ID# 101-148, Upstream**



**Site# 1 Photo ID# 101-149, Downstream**



**Site# 2 Photo ID# 101-150, Upstream**



**Site# 2 Photo ID# 101-151, Downstream**

**WBID# 0613**



**Site# 3 Photo ID# 101-152, Upstream**



**Site# 3 Photo ID# 101-153, Downstream**



**Site# 4 Photo ID# 101-154, Upstream**

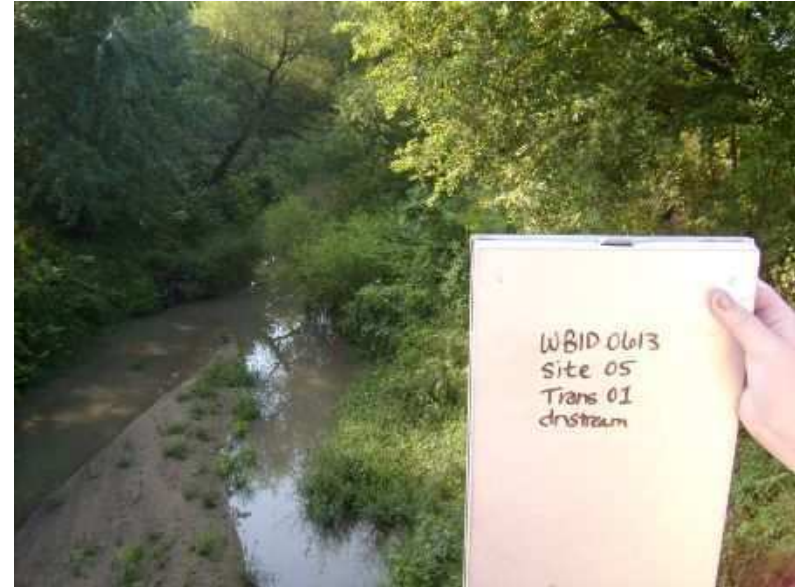


**Site# 4 Photo ID# 101-155, Downstream**

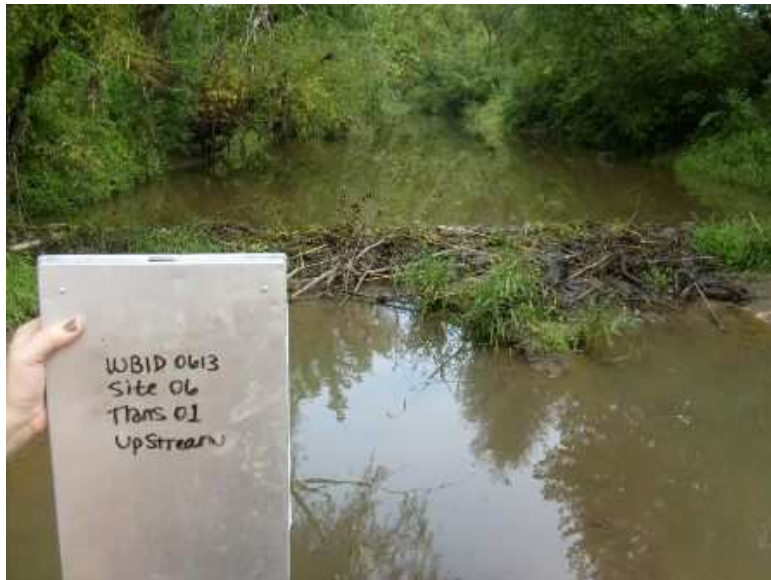
**WBID# 0613**



**Site# 5 Photo ID# 101-156, Upstream**



**Site# 5 Photo ID# 101-157, Downstream**



**Site# 6 Photo ID# 101-158, Upstream**

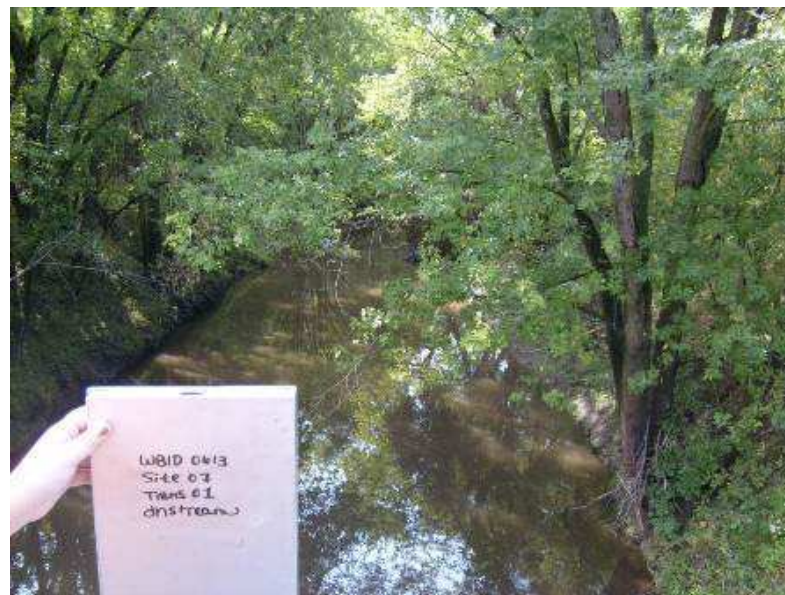


**Site# 6 Photo ID# 101-159, Downstream**

**WBID# 0613**



**Site# 7 Photo ID# 101-161, Upstream**



**Site# 7 Photo ID# 101-162, Downstream**



**Site# 8 Photo ID# 101-163, Upstream**



**Site# 8 Photo ID# 101-164, Downstream**

**WBID# 0613**



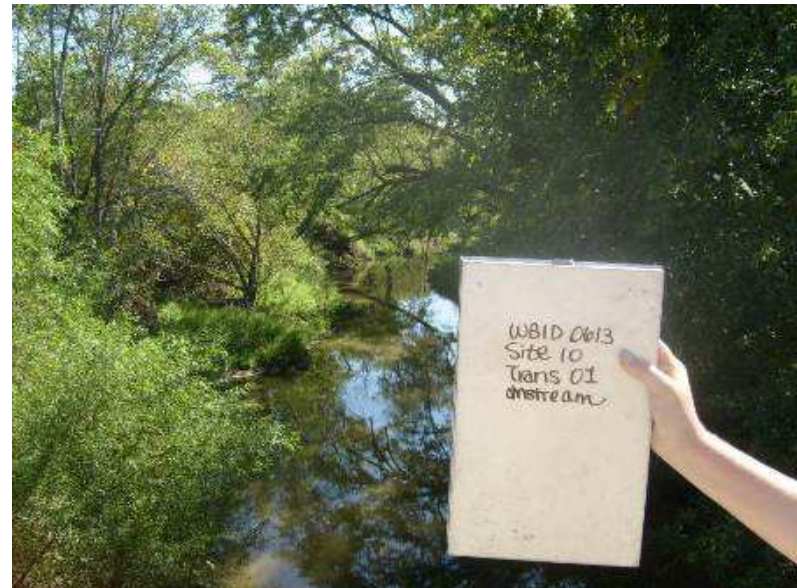
**Site# 9 Photo ID# 101-165, Upstream**



**Site# 9 Photo ID# 101-166, Downstream**



**Site# 10 Photo ID# 101-167, Upstream**



**Site# 10 Photo ID# 101-168, Downstream**